

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A method of recording information to an optical recording medium to which information is recorded by projecting a pulse-modulated laser beam onto the optical recording medium and forming on the optical recording medium a plurality of recording marks selected from a group of several types of recording marks each with different lengths, wherein the method of recording information to an optical recording medium comprises:

setting recording powers of a top pulse and/or a last pulse of a laser beam used for forming at least one recording mark from said group to a second recording power lower than a first recording power which is a recording power of an intermediate pulse(s) between the top pulse and the last pulse;

setting a pulse width of a cooling pulse of the laser beam used for forming at least one recording mark contained within said group to be wider than a pulse width of each of the top pulse, intermediate pulse(s) and last pulse; and

setting a bottom ~~powers~~ power of each low power pulse, including the cooling pulse, downward pulses to be substantially the same as each other,

thereby recording information in the optical recording medium.

2. (Previously Presented) The method of recording information to the optical recording medium in accordance with Claim 1, wherein the recording powers of the top pulse and the last pulse are set at a same level.

3. (Previously Presented) The method of recording information to the optical recording medium in accordance with Claim 1, wherein the first recording power ( $Pw1$ ) and the second recording power ( $Pw2$ ) are set so that  $Pw2/Pw1$  is smaller than 0.9.

4. (Previously Presented) The method of recording information to the optical recording medium in accordance with Claim 2, wherein the first recording power ( $P_{w1}$ ) and the second recording power ( $P_{w2}$ ) are set so that  $P_{w2}/P_{w1}$  is smaller than 0.9.

5.-8. (Canceled)

9. (Previously Presented) The method of recording information to the optical recording medium in accordance with Claim 1, wherein the pulse width of the cooling pulse is set to be equal to or wider than 1.0 T, wherein T is one clock cycle.

10. (Previously Presented) The method of recording information to the optical recording medium in accordance with Claim 1, wherein a length of a shortest signal between neighboring recording marks is equal to or shorter than 30 ns.

11. (Previously Presented) The method of recording information to the optical recording medium in accordance with Claim 1, wherein a length of a shortest signal between neighboring recording marks is equal to or shorter than 20 ns.

12. (Currently Amended) An optical recording medium comprising at least a recording layer to which information is recorded by projecting a pulse-modulated laser beam there\_onto and forming thereon a plurality of recording marks selected from a group of several types of recording marks each with different lengths, wherein the optical recording medium includes information used for setting ~~required to set~~ recording powers of a top pulse and/or a last pulse of a laser beam used for forming at least one recording mark from said group to a second recording power lower than a first recording power which is a recording power of an intermediate pulse(s) between the top pulse and the last pulse and record the information therein, and for setting ~~set~~ a pulse width of a cooling pulse of the laser beam used during ~~for~~ forming at least one recording mark contained within said group to be wider than a pulse width of each of the top pulse, intermediate pulse(s) and last pulse and for setting ~~set~~ a bottom power ~~powers~~ of

each low power pulse, including the cooling pulse, downward pulses to be substantially the same as each other.

13. (Previously Presented) The optical recording medium in accordance with Claim 12, which further comprises information required to set the recording powers of the top pulse and the last pulse at a same level and record the information therein.

14. (Previously Presented) The optical recording medium in accordance with Claim 12, which further comprises information required to set the first recording power ( $P_{w1}$ ) and the second recording power ( $P_{w2}$ ) so that  $P_{w2}/P_{w1}$  is smaller than 0.9.

15. (Previously Presented) The optical recording medium in accordance with Claim 13, which further comprises information required to set the first recording power ( $P_{w1}$ ) and the second recording power ( $P_{w2}$ ) so that  $P_{w2}/P_{w1}$  is smaller than 0.9.

16. (Currently Amended) An information recording and reproducing apparatus that records information by projecting a pulse-modulated laser beam onto an optical recording medium and forming on the optical recording medium a plurality of recording marks selected from a group of several types of recording marks each with different lengths, thereby recording information in the optical recording medium wherein the information recording and reproducing apparatus comprises at least optical means for projecting the laser beam onto the optical recording medium and laser drive means for supplying a laser drive signal for controlling the laser beam, the laser drive means being adapted to supply a laser drive signal to set recording powers of a top pulse and/or a last pulse of a laser beam used for forming at least one recording mark from said group to a second recording power lower than a first recording power which is a recording power of an intermediate pulse(s) between the top pulse and the last pulse, a laser drive signal to set a pulse width of a cooling pulse of the laser beam used for forming at least one recording mark contained within said group to be wider than a pulse width of each of the top pulse, intermediate pulse(s) and last pulse and a laser drive signal to set a bottom powers-power

of each low power pulse, including the cooling pulse, downward pulses to be substantially the same as each other.

17. (Previously Presented l) The information recording and reproducing apparatus in accordance with Claim 16, wherein the recording powers of the top pulse and the last pulse are set at a same level.

18. (Previously Presented) The information recording and reproducing apparatus in accordance with Claim 16, wherein the first recording power ( $P_{w1}$ ) and the second recording power ( $P_{w2}$ ) are set so that  $P_{w2}/P_{w1}$  is smaller than 0.9.

19. (Previously Presented) The information recording and reproducing apparatus in accordance with Claim 17, wherein the first recording power ( $P_{w1}$ ) and the second recording power ( $P_{w2}$ ) are set so that  $P_{w2}/P_{w1}$  is smaller than 0.9.

20. (Currently Amended) A method, comprising:  
setting at least one recording power of at least one intermediate pulse to a first power level;

setting recording powers of a top pulse and a last pulse of a laser beam used for forming at least one recording mark to a second power level lower than the first power level which is the at least one recording power of the at least one intermediate pulse;

setting a at least one bottom power for each pulse of the laser beam between each recording power pulse, the bottom power pulses all having the same power level as each other;  
~~downward pulses positioned between the top pulse and the at least one intermediate pulse and between the at least one intermediate pulse and the last pulse to be lower than the first power level and the second power level and to be same as each other;~~

setting a pulse width of a cooling pulse of the laser beam used for forming at least one recording mark to be wider than a pulse width of any one of the top pulse, an intermediate

pulse and last pulse and having a same power level as a bottom most power level and all bottom power pulses having substantially the same power level.

21. (Previously Presented) The method according to claim 20, further including:

setting the pulse width of the cooling pulse to be greater than or equal to three times wider than any of said at least one intermediate pulse of a pulse train of said laser beam for forming the recording mark.

22. (New) A method, comprising:

setting at least one recording power of at least one intermediate pulse to a first power level;

setting recording powers of a top pulse and a last pulse of a laser beam used for forming at least one recording mark to a second power level lower than the first power level which is the at least one recording power of the at least one intermediate pulse;

setting a bottom power for each pulse of the laser beam between each recording power pulse, the width of the bottom power pulses being selected to have a width longer than the recording pulse it immediately follows;

setting a pulse width of a cooling pulse of the laser beam used for forming at least one recording mark to be wider than a pulse width of any one of the top pulse, an intermediate pulse and last pulse and having a same power level as a bottom most power level.

23. (New) The method according to claim 22 wherein the power level of all bottom power pulses are to substantially the same power level as each other.